

### REMARKS/ARGUMENTS

In view of the foregoing amendments and the following remarks, the applicants respectfully submit that the pending claims recite statutory subject matter under 35 U.S.C. § 101, and are not rendered obvious under 35 U.S.C. § 103. Accordingly, it is believed that this application is in condition for allowance. **If, however, the Examiner believes that there are any unresolved issues, or believes that some or all of the claims are not in condition for allowance, the applicants respectfully request that the Examiner contact the undersigned to schedule a telephone Examiner Interview before any further actions on the merits.**

The applicants will now address each of the issues raised in the outstanding Office Action.

#### Rejections under 35 U.S.C. § 101

Claims 1, 3, 5-33, 35 and 37-66 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. The applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection in view of the following.

The applicants agree that a test for determining whether claimed subject matter recites statutory subject matter is whether it provides a concrete, useful and tangible result, or a practical application. The claims pertain to determining and/or storing user profile information. Since the user profile information is not an abstract data structure, it is concrete. If stored,

it is tangible. Since, as described in § 4.2.2 of the application the user profile information can be used for enhanced ad targeting, ad creative selection and generation and query ambiguity resolution, etc., it is useful.

Since, as just demonstrated, the generation and/or storage of user profile information provides a concrete useful and tangible result, the claims recite statutory subject matter. Therefore, the applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection.

Further, new claims 69-76 depend from claims 1, 7, 14, 27, 33, 39, 46 and 59, respectively, and further recite that the user profile information (or some determination made using such information) is used to control the serving of an advertisement. These claims are supported throughout the specification. (See especially, page 12, lines 1-21; and page 19, line 1 through page 20, line 30.) Thus, these new dependent claims provide further concrete, useful and tangible results. In page 4 of Paper No. 20060728, the Examiner seems to suggest that this additional feature would render the claims statutory.

### **Objections**

Claims 1, 3, 33 and 35 are objected to as being of improper dependent form for failing to further limit the subject matter of the previous claim. The applicants respectfully request that the Examiner reconsider and withdraw this objection in view of the following.

The Examiner notes that claims 1 and 33 indicate that search information is independent of documents retrieved from search results, but dependent claims 3 and 33 (the applicants assume the Examiner intended claims 3 and 35) indicate that the user search information is dependent on search result information. The Examiner concludes that dependent claims 3 and 35 do not further limit the subject matter of claims 1 and 33 from which they depend, respectively. The applicants respectfully disagree.

Claims 1 and 33 recite determining initial user profile using **information** included in past search queries submitted to a search engine by a user, wherein **such information is independent of documents returned as search results** to the past search queries. Claims 3 and 35 further recite that the determination of the initial user profile uses **past document selections** by the user. Claims 3 and 35 do not modify **the information** used in claim 1 and 33. Rather, they modify **the determination** made. That is, claims 1 and 33 recite that the determination uses a first type of information (A), while claims 3 and 35 should be read to recite that the determination uses a second type of information (B) in addition to the first type of information (A) -- (A and B). Consequently, claims 3 and 35 further modify claims 1 and 33. Therefore, this objection should be withdrawn for at least this reason.

Moreover, claims 3 and 35 have been amended to clarify that that the past document selections by the user are used as a **further** source of information in the determination of initial user profile information.

### Rejections under 35 U.S.C. § 112

Claims 1, 3, 33 and 35 are rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. The applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection in view of the following.

The Examiner contends that one can infringe independent claims 1 and 33, but not infringe dependent claims 3 and 35. The applicants frankly fail to appreciate the problem since independent claims are necessarily broader than the dependent claims, and are therefore easier to infringe.

The Examiner also contends that search information that is independent of documents retrieved from search results is not possible because "a search program that provides users with search results that independent or irrelevant from a user's search interests is considered inoperable." (Paper No. 20060728, page 5.) In response, the applicants respectfully note that the claims recite an act of, or means for, determining initial user profile information for the user using **information included in past search queries submitted to a search engine by the user**, wherein such information is independent of documents returned as search results to the past search queries. Since the claims recite **"search queries"** submitted to a search engine, not **"search results"** provided from the search engine, the Examiner's finding of inoperability is based on something that is not claimed.

Finally, as discussed above in response to the objection to these claims, dependent claims 3 and 35 further modify claims 1 and 33.

In view of the foregoing, the applicants respectfully submit that claims 1, 3, 33 and 35 comply with 35 U.S.C. § 112, second paragraph.

### **Rejections under 35 U.S.C. § 103**

Claims 1-26 and 33-58 stand rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,754,939 ("the Herz patent") in view of U.S. Patent No. 6,981,040 ("the Konig patent"). The applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection in view of the following.

Before addressing at least some of the patentable features of the claimed invention, the applicants will first introduce the Herz and Konig patents.

The Herz patent concerns matching target objects (e.g., articles) with users. (See, e.g., column 55, line 41, et seq.) Specifically, the Herz patent uses information in a "target profile" for the target object and information in a "target profile interest summaries" for the user for this purpose. (See, e.g., the Abstract.)

More specifically, the target profile may include word frequency in the target object, as well as frequency of use of the word in all objects. (This is the common notion of document frequency-inverse document frequency.) More generally, the "target profile" may include attributes of the target object (See, e.g., column 4,

lines 51-53.) The "target profile interest summaries" is a summary of digital profiles of target objects that the user likes and/or dislikes. (See, e.g., column 4, lines 55-58.) The information in the "target profile interest summaries" need not be entered by the user (active information), but rather, may be constructed using user interest feedback information (passive information). (See, e.g., column 6, lines 46-51.)

The Herz patent may estimate a user's interest in various target objects by comparing the target profiles of the target objects against the target profile interest summaries (in the form of search profiles in the user's search profile sets) to generate, for the user, a customized rank-ordered listing of target objects that are most likely of interest to the user. (See, e.g., column 6, lines 51-58.) Thus, the target profile interest summary of a first user and the object profile of a first object may be used to see if the first user would be interested in the first object. However, the system will not have feedback information from the user about objects (e.g., articles) that have never been presented to the user. To address this problem, as described in Figure 12 and column 18, line 39 et seq., a likelihood of interest in a particular target object for a specific user can be automatically computed as the sum of (a) an intrinsic quality of the first object and (b) the "topical interest" that *users like the first user* have in *target objects like the first object*.

As described in column 20, line 15 through column 21, line 22, the user profile information is used to find other users like the first user. Thus, although the Herz patent discusses storing user attributes (e.g., age, zip

code, income, past purchases, etc.) as a "user profile" (See, e.g., column 4, lines 54 and 55.), such user profile information is for (or of) a user, not for (or of) a document.

As used in the Herz patent, a "search profile" or a "query profile" is a collection of attributes such that a user should like target objects with a target profile with a similar set of attributes. (See, e.g., column 4, lines 58-61.) The "attributes" are data that describe a target object and may include, for example, long pieces of text, short pieces of text, numeric measurements and associations with other types of documents. (See, e.g., column 6, lines 18-33.) The "search profile" for a user may be determined using target profiles of articles that the user has accessed and the relevance feedback that the user has provided. (See, e.g., column 55, lines 52-58.) The relevance feedback (also referred to as "passive feedback") may be a function of how much of (in terms of content or time) an article the user viewed (See, e.g., column 17, lines 33-49.), attributes of an email reply by the user (See, e.g., column 17, lines 50-52.), attributes of a purchase by the user (See, e.g., column 17, lines 52-58.), etc. As can be appreciated from the foregoing, the Herz invention uses relevance feedback (or passive feedback) to determine what types of objects (e.g., articles) a user likes, which, in turn, is used to help filter user searches. It does not, however, use information included in past search queries submitted to a search engine by the user (wherein such information is independent of documents returned as search results to the past search queries) to generate information for a user profile.

Finally, Figures 1 and 2 of the Herz patent illustrate nodes (as computers) and links (as communications links) in the context of computers that can communicate with one another over a communications network. These nodes and links are in no way related to nodes and edges of a graph, the topology of which can be used to infer user profile information.

In the Konig patent:

***User interactions with a computer are transparently monitored while the user is engaged in normal use of the computer, and monitored interactions are used to update user-specific data files that include a set of documents associated with the user. Parameters of a learning machine, which define a User Model specific to the user, are estimated from the user-specific data files. Documents that are of interest and documents that are not of interest to the user are treated distinctly in estimating the parameters. The parameters are used to estimate a probability  $P(u/d)$  that a document is of interest to the user, and the estimated probability is then used to provide personalized information services to the user. [Emphasis added.]***

Column 4, lines 22-34. The personalized information services include a search using a personal web, personalized browsing and navigation, personalized expert finding, and personalized pushed information. (See, e.g., column 7, line 38 through column 8, line 28.) All of these services:



are based on a User Model 13 that represents user interests in a document or product independently of any specific user information need, i.e., not related to a specific query. The User Model 13 is a function that is developed and updated using a variety of knowledge sources and that is independent of a specific representation or data structure.

Column 8, lines 29-35. The applicants believe that one skilled in the art would understand this to mean that (1) the user model can be used to infer a user's interest in a document or product without requiring an immediate and specific expression of the user's information need, such as a search query for example, and (2) the information used to generate and update the user model needn't have a particular form.

Users may be clustered into groups, forming a cluster tree. The user model may include clusters of users similar to the user. (See, e.g., column 14, lines 25-27.) Clustering users is useful because it:

allows estimation of user interests based on the interests of users similar to the user. For example, if the user suddenly searches for information in an area that is new to him or her, the User Model borrows characteristics of User Models of users with similar interests.

Column 10, lines 12-17.

Having introduced the Herz and Konig patents, the applicants will now address at least some of the patentable features of the claimed invention.

**Claims 1-6 and 33-38**

Since claims 2, 4, 34 and 36 have been canceled, this ground of rejection is rendered moot with respect to these claims.

Independent claims 1 and 33 are not rendered obvious by the Herz and Konig patents because these patents, either taken alone or in combination, neither teach, nor suggest, an act of (or means for) determining initial user profile information for the user using information included in past search queries submitted to a search engine by the user, wherein such information is independent of documents returned as search results to the past search queries. Further, one skilled in the art would not have been motivated to combine these references as proposed by the Examiner.

As discussed in a previous response, the specification of the present application provides an illustrative example of how initial user profile information for a user can be determined using past search queries submitted by the user. Specifically, the specification states:

There are many alternative ways to obtain user information. For example, a score 440 for an attribute 420 and value 430 can be determined with a machine learning classifier which predicts values 430 of the UPI attributes 420 in the profile using words in queries deployed previously. For example, given the keywords related to "women's health" in previous search queries, the classifier may infer that the user is a woman with probability 0.8. Further, given that Japanese words were used in previous search

queries, the classifier may infer that the user is Japanese with probability 0.9, etc.

Page 24, lines 7-14.

The Examiner repeated his position that that column 4, lines 58-61 of the Herz patent teaches this feature. (See Paper No. 20060728, page 7.) As used in the Herz patent, a "search profile" or a "query profile" is a collection of attributes such that a user should like target objects with a target profile with a similar set of attributes. The "search profile" for a user may be determined using target profiles of articles that the user has accessed and the relevance feedback that the user has provided. The relevance feedback (or "passive feedback") may be a function of how much of (in terms of content or time) an article the user viewed, attributes of an email reply, attributes of a purchase, etc. Thus, the Herz patent uses relevance feedback (or passive feedback) to determine what types of objects (e.g., articles) a user likes, which, in turn, is used to help filter user searches. Defining a collection of attributes that a user likes target objects to have (e.g., short and long pieces of text) based on past behavior of the user does not teach past search queries ***submitted to a search engine by the user.***

The Examiner also argues that the Herz patent can relate a user with past search words, such as past interest in films whose review text (attribute h) contains words like "chase," "explosion," "explosions," "hero," "gripping," and "superb," citing column 10, lines 37-42. (See Paper No. 20060728, page 7.) However, attributes of movie reviews that a user has been

interested in neither teaches, nor suggests, past search queries submitted to a search engine by the user.

The Examiner apparently does not rely on the Konig patent to compensate for this deficiency of the Herz patent. Thus, independent claims 1 and 33 are not rendered obvious by the Herz and Konig patents for at least the foregoing reason. Since claims 3, 5 and 6 depend from claim 1 and since claims 35, 37 and 38 depend, either directly or indirectly from claim 33, these claims are similarly not rendered obvious by the Herz and Konig patents.

**Claims 7-13 and 39-45**

Claims 7 and 39 are not rendered obvious by the Herz and Konig patents because these patents, either taken alone or in combination, neither teach, nor suggest, acts of (or means for) inferring user profile information for the user by (i) defining a node for each of a number of documents and the user, (ii) adding edges between nodes if there is an association between the nodes to define a graph, and (iii) ***inferring user profile information for the user using a topology of the graph and user profile information of other documents.***

The Examiner refers to Figures 1 and 2 of the Herz patent, and contends that the nodes (computers) and links (communications links) teach these features. (See, e.g., Paper No. 20060728, page 7.) The Examiner further argues that in the Herz patent, the information servers contain the target documents, citing column 26, line 37, and column 29, lines 1-5. However, Figures 1 and 2 of the Herz patent show nodes and links in the context of computers that can communicate with one another over a

communications network. These nodes and links are in no way related to nodes and edges of a **graph, the topology of which is used to infer user profile information.**

The Examiner then argues that the system can link users to documents based on the users' interests in the documents or other documents associated with each link, citing column 60, lines 62-64. This section merely concerns ranking links in a hypertext document, which are in no way related to nodes and edges of a graph, the topology of which can be used to infer user profile information.

Finally, the Examiner argues that since the system can determine relationships between users and documents, "one skilled in the art **could** easily infer from these relationships to **create graphs**," citing column 10, lines 46-53. (Paper No. 20060728, page 8. Emphasis added.) First, the cited portion of the Herz patent merely discusses that a user might like movies similar to those the user has liked in the past, or might like movies liked by similar users. This has nothing to do with **inferring user profile information for the user using a topology of the graph and user profile information of other documents** as claimed. More importantly, the fact that a system "**could be**" modified is not the proper standard for showing obviousness under 35 U.S.C. § 103. Rather, the prior art must **suggest** such a modification. The fact that graph theory defines objects with "nodes" and connections with "edges" neither teaches, nor suggests, (i) defining a node for each of a number of documents and the user, wherein each node represents a particular one of the number of documents or the user, (ii) adding edges between nodes if there is an

association between the nodes to define a graph, and  
(iii) ***inferring user profile information for the user  
using a topology of the graph and user profile  
information of other documents.***

The nodes and links in the Herz patent are described in a totally different context than recited in independent claims 7 and 39. When interpreting the terms "nodes" and "edges", the Examiner improperly ignores the specification as it would be interpreted by one of ordinary skill in the art. In Phillips v. AWH Corp., No. 03-1269, slip op. (Fed. Cir. July 12, 2005) (en banc), the Court of Appeals for the Federal Circuit ("the CAFC") stated:

the specification "is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term."

Id., at 13, quoting from Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996).

In the instant application, the specification discusses "nodes" in terms of representing users and documents on a graph and "edges" between the user node and document nodes for the top Web pages that were returned by a search engine in response to search queries that the user submitted, and perhaps between pairs of documents that have links (e.g., hyperlinks) between them. Specifically, with reference to Figures 10 and 11, the specification states:

In one exemplary embodiment of the present invention, the association information 1070 may be ***a graph in***

**which users and documents are represented as nodes** 1072 and 1076, respectively. Figure 11 is a flow diagram of an exemplary method 1100 that may be used to associate users and/or documents in a manner consistent with the present invention. As shown, **nodes may be defined for each user and document.** (Block 1110) For each of the user nodes 1072, **edges** 1074 (which indicate an association) **may be drawn between the user node and document nodes for the top Web pages that were returned by a search engine in response to search queries that the user submitted.** (In a variant, the edges 1074 **could be drawn only to Web pages that the user selected** (e.g., clicked on)). Additionally, **edges** 1078 **may be drawn between pairs of documents that have links (e.g., hyperlinks) between them.** (Block 1120) Although not shown, user-to-user associations may also be generated. For example, edges may be added between users that have visited one or more of the same documents. [Emphasis added.]

Page 25, lines 4-18. Thus, using the specification, one of ordinary skill in the art at the time of the invention would interpret "nodes" and "edges" as representations of users and documents, and relationships between users and documents, on a graph.

Although the Examiner apparently argues, on the one hand, that the information servers of the Herz patent contain documents to which the user can be linked, and that one could infer a graph from purported relationships between users and other users or users a documents, the Examiner later concedes that the Herz patent does not describe a node that represents a document or users. (See Paper No. 20060728, page 8.) In an attempt to

compensate for this admitted deficiency of the Herz patent, the Examiner relies on the Konig patent. In particular, the Examiner contends that the Konig patent monitors the user to create a set of documents associated with the user, and that Figures 5A and 6A represent nodes that represent a particular user. (See Paper No. 20060728, pages 8 and 9.) The Examiner then concludes:

it would have been obvious for one skilled in the art to have a system that have[sic] graphical representation of users and/or document[s], because, in computer science, a graph is an abstract data type (ADT) **that consists of a set of nodes and a set of edges that establish relationships (connections) between the nodes.** The motivation for one skilled [in the art] to use [a] graph would be to establish relationships between the user and/or document.

Paper No. 20060728, page 9. The applicants respectfully disagree.

First, the elements in Figures 5A and 6A are intended to illustrate clustering users. As discussed above, clustering users is useful because it:

allows estimation of user interests based on the interests of users similar to the user. For example, if the user suddenly searches for information in an area that is new to him or her, the User Model borrows characteristics of User Models of users with similar interests.

Column 10, lines 12-17. The tree in Figure 5A illustrates the fact that a user belongs to a cluster,



which in turn belongs to other clusters. The tree in Figure 6A illustrates that a user can belong to more than one cluster with various probabilities. Thus, the cited Figures merely illustrate a user's membership in one or more clusters. It does not (i) define a node for each of a number of documents and the user, wherein each node represents a particular one of the number of documents or the user, (ii) add edges between nodes if there is an association between the nodes to define a graph, and (iii) ***infer user profile information for the user using a topology of the graph and user profile information of other documents.***

Further, the Examiner's motivation to use a graph to establish relationships between a user and/or documents is not suggested in the art. Indeed, the Herz patent already defines data structures -- target profiles and target profile interest summaries -- that it needs in order to perform its function of customizing the identification of objects to a user. Similarly, the Konig patent already defines a data structure -- the user model -- that it needs in order to perform its functions of providing personalized information services. The art does not suggest, nor has the Examiner demonstrated, how replacing or supplementing these data structures with the proposed graph data structure would benefit the performance of either system.

Thus, independent claims 7 and 39 are not rendered obvious by the Herz and Konig patents for at least the foregoing reasons. Since claims 8-13 depend from claim 7 and since claims 40-45 depend from claim 39, these claims are similarly not rendered obvious by the Herz and Konig patents.

**Claims 14-26 and 46-58**

Independent claims 14 and 46, as amended, are not rendered obvious by the Herz and Konig patents because these patents do not teach acts of (or means for) determining user profile information **for a document, associating with the document**, the determined user profile information for the document, and **storing the association of the document with the determined user profile information for the document**.

As indicated by Figure 5 of the present application, user profile information 524 may be associated with a document 522 (and other user profile information 514, 534, and 544 may be associated with other things 512, 532 and 542). As discussed in detail above, although the Herz patent discusses storing user attributes (e.g., age, zip code, income, past purchases, etc.) as a "user profile", such user profile information is for (or of) a user, not for (or of) a document. It is unclear from the Office Action how the Examiner applied the Konig patent to these claims. However, the Konig patent does not compensate for the foregoing deficiency of the Herz patent with respect to claims 14 and 46.

Thus, independent claims 14 and 46 are not rendered obvious by the Herz and Konig patents for at least the foregoing reason. Since claims 15-26 depend, either directly or indirectly, from claim 14 and since claims 47-58 depend, either directly or indirectly, from claim 46, these claims are similarly not rendered obvious by the Herz and Konig patents.

Claims 27-32 and 59-64 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Herz patent in view of the Konig patent, and further in view of U.S. Publication No. 2002/0049635 ("the Mai publication"). The applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection in view of the following.

Before addressing at least some of the patentable features of the claimed invention, the applicants will first introduce the Mai publication.

The Mai publication discusses filtering a set of ads to generate a subset of ads for display to a user. Such filtering may be a function of (a) a correlation of each ad to content being provided, and/or (b) a user profile. The user profile may include (a) user content preferences (based on past viewing), and/or (b) expressly entered demographic information.

Independent claims 27 and 59 are neither taught, nor suggested, by the Herz and Konig patents for reasons similar to those discussed above with reference to claims 14 and 46. Similarly, in the Mai publication, the user profile (which may include user content preferences (based on past viewing), and/or expressly entered demographic information) is for a user (or client device), not for a document.

The Examiner relies on the Mai publication as teaching scoring ads based on attributes of users and documents. Even if this purported teaching of the Mai patent were combined with the Herz and Konig patents as proposed by the Examiner, the combination would neither teach, nor suggest, an act of (or means for) determining a second match value using (A) at least one of user

profile information of an ad landing page of the ad and user profile information used for targeting the ad, and (B) user profile information of a document with which the ad will be served, **wherein the user profile information of the document is stored in association with the document, not the user.**

Thus, independent claims 27 and 59 are not rendered obvious by the Herz, Konig and Mai references for at least the foregoing reason. Since claims 28-32 depend from claim 27 and since claims 60-64 depend from claim 59, these claims are similarly not rendered obvious by the Herz, Konig and Mai references.

Further, one skilled in the art would not have been motivated to combine the Herz, Konig and Mai references as proposed by the Examiner. Specifically, in the Mai publication, the filtering of advertisements is done **locally at the client device**. Apparently, this is because the user profile is stored locally on the client device, and the filtering is not too intensive. On the other hand, the storage of user information and the filtering of objects is done by **servers**, not by the client devices, in the Herz patent. Apparently, this is because the various profiles are stored at servers and because the filtering is non-trivial. Similarly, as shown in Figure 1 of the Konig patent, the personal web 12, which stores a user model 13 for each user, is stored on a **central computer or server** 14 on a computer network. It can be stored on more than one central computer or server. (See, e.g., column 7, lines 4-37.) In view of the foregoing fundamental differences between where user profile data is stored and where filtering is done in the Herz and Konig patents as compared with the Mai

publication, one skilled in the art would not have been motivated to modify the Herz and Konig patents in view of the Mai publication.

#### **New claims**

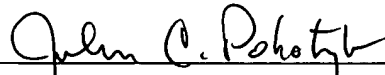
New claims 69-76 depend from claims 1, 7, 14, 27, 33, 39, 46 and 59, respectively, and further recite that the user profile information (or some determination made using such information) is used to control the serving of an advertisement. These claims are supported throughout the specification. (See especially, page 12, lines 1-21; and page 19, line 1 through page 20, line 30.)

#### **Conclusion**

In view of the foregoing amendments and remarks, the applicants respectfully submit that the pending claims are in condition for allowance. Accordingly, the applicants request that the Examiner pass this application to issue.

Respectfully submitted,

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